

AD _____

Award Number: W81XWH-09-1-0171

TITLE: Pittsburgh-Tuskegee Prostate Training Program (PTPTP)

PRINCIPAL INVESTIGATOR: Dr. Alan Wells

CONTRACTING ORGANIZATION: University of Pittsburgh
Pittsburgh, PA 15213

REPORT DATE: April 2011

TYPE OF REPORT: Annual Summary

PREPARED FOR: U.S. Army Medical Research and Materiel Command
Fort Detrick, Maryland 21702-5012

DISTRIBUTION STATEMENT: Approved for public release; distribution unlimited

The views, opinions and/or findings contained in this report are those of the author(s) and should not be construed as an official Department of the Army position, policy or decision unless so designated by other documentation.

| | | | | | |
|---|-------------------------|---|---|--|---|
| REPORT DOCUMENTATION PAGE | | | | <i>Form Approved</i> OMB No. 0704-0188 | |
| <small>Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing this collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0704-0188), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.</small> | | | | | |
| 1. REPORT DATE (DD-MM-YYYY) 01-04-2011 | | 2. REPORT TYPE Annual Summary | | 3. DATES COVERED (From - To) 15 Mar 2010 - 14 Mar 2011 | |
| 4. TITLE AND SUBTITLE Pittsburgh-Tuskegee Prostate Training Program (PTPTP) | | | | 5a. CONTRACT NUMBER | |
| | | | | 5b. GRANT NUMBER W81XWH-09-1-0171 | |
| | | | | 5c. PROGRAM ELEMENT NUMBER | |
| 6. AUTHOR(S) Dr. Alan Wells E-Mail: wellsa@upmc.edu | | | | 5d. PROJECT NUMBER | |
| | | | | 5e. TASK NUMBER | |
| | | | | 5f. WORK UNIT NUMBER | |
| 7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) University of Pittsburgh Pittsburgh, PA 15213 | | | | 8. PERFORMING ORGANIZATION REPORT NUMBER | |
| 9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES) U.S. Army Medical Research and Materiel Command Fort Detrick, Maryland 21702-5012 | | | | 10. SPONSOR/MONITOR'S ACRONYM(S) | |
| | | | | 11. SPONSOR/MONITOR'S REPORT NUMBER(S) | |
| 12. DISTRIBUTION / AVAILABILITY STATEMENT Approved for Public Release; Distribution Unlimited | | | | | |
| 13. SUPPLEMENTARY NOTES | | | | | |
| 14. ABSTRACT Prostate cancer disproportionately afflicts African-American men. As such, we feel that it is critically important to recruit researchers from this population if we are to conquer this disease. Numerous programs have attempted to recruit minorities to biomedical research and prostate cancer in particular. Often this involves a short period of research immersion during a summer semester. However, it has been shown that many of these trainees do not persevere in the selected area due to the singular nature of the experience. Our goal is to formalize a program to broaden the scope of and enlarge Tuskegee University's prostate cancer research , which will be accomplished through targeting interested undergraduate students early during their science studies at Tuskegee University and enabling them to participate in summer research and education training periods at the University of Pittsburgh and the University of Pittsburgh Cancer Institute as part of their overall prostate cancer education. | | | | | |
| 15. SUBJECT TERMS prostate cancer, health disparities, training, education, tumor biology | | | | | |
| 16. SECURITY CLASSIFICATION OF: | | | 17. LIMITATION OF ABSTRACT UU | 18. NUMBER OF PAGES 8 | 19a. NAME OF RESPONSIBLE PERSON USAMRMC |
| a. REPORT U | b. ABSTRACT U | c. THIS PAGE U | | | 19b. TELEPHONE NUMBER (include area code) |

DoD Award W81XWH-09-1-0171

Pittsburgh-Tuskegee Prostate Training Program

**Alan Wells (Univ Pittsburgh)
Timothy Turner (Tuskegee Univ)**

Table of Contents

| | <u>Page</u> |
|--|--------------------|
| Introduction..... | 3 |
| Body..... | 3 |
| Key Research Accomplishments..... | 5 |
| Reportable Outcomes..... | 5 |
| Conclusion..... | 6 |
| References..... | N/A |
| Appendices..... | N/A |

PITTSBURGH TUSKEGEE PROSTATE TRAINING PROGRAM

Alan Wells (Pittsburgh), Timothy Turner (Tuskegee)

INTRODUCTION

We proposed an extended training program for college undergraduates that aims to build a cadre of young investigators of color in prostate cancer. Prostate cancer disproportionately afflicts African-American men; this increased incidence is compounded by issues of access to and utilization of healthcare resources. As such, we feel that it is critically important to recruit researchers from this population if we are to conquer this disease. Numerous programs have attempted to recruit minorities to biomedical research and prostate cancer in particular. Often this involves a short period of research immersion during a summer semester. However, it has been shown that many of these trainees do not persevere in the selected area due to the singular nature of the experience. *We hypothesize that an immersive summer training program works best within a larger college-oriented experience.*

We proposed to test this hypothesis by designing an undergraduate research training program in prostate cancer that starts in the home college at Tuskegee University, immerses the students for 10 weeks in a specific research project with mentors at the University of Pittsburgh, and then continues the research after returning to Tuskegee under the aegis of a collaborating mentor. Thus, the student is to undertake the research over a one- to two-year period allowing the student to partake meaningfully in the full cycle of research – thesis generation, experimental planning, experimentation, presentation, and writing and publication. Thus, students will be recruited and selected at the beginning of the year, develop a project that involves collaboration between mentors at Pittsburgh and Tuskegee, take course that contribute to the project prior to the summer, initiate that project in depth at Pittsburgh, and then return to Tuskegee to continue the work as independent study, and communicate the findings at national meetings and in the literature. This extended involvement not only benefits the trainee but also forges collaborations between individual faculty members at the two different institutions. This should provide for further avenues that facilitate mainstreaming and integration of training and research for other undergraduate, graduate and post-doctoral trainees.

BODY

The accepted Statement of Work (Table 1) described a series of tasks to accomplish the Goals of this training program. We will state the SOW Task and then comment on the work accomplished. In sum, all Tasks were accomplished successfully.

Year 2 (2010)

December 2009 – January 2010, Tuskegee University sophomore trainees will be selected as “Prostate Cancer Scholars” for summer internship at the University of Pittsburgh. For the second year, this involved two distinct pathways. The new trainees in the class of 2010 were recruited as per earlier by posters, emails and announcements at Tuskegee along with targeted students being approached by Tuskegee mentors. Four students were selected but only three finally accepted. The criteria were grades, research interests, faculty recommendations, and student essays. The the class of 2009, the trainees and their Tuskegee mentors were contacted by the program and their Pittsburgh mentors to ascertain ability to return. All four returned for the second year of the program. Thus, we had 7 trainees actively in the program.

February – April 2010, Trainees will be selectively paired with University of Pittsburgh Faculty mentors according to their research interests. All three new student trainees were successfully placed in laboratories for the summer term at University of Pittsburgh (Table 1). The four returning trainees all continued in the same projects (Table 2).

Table 1. Class of 2010 student trainees and mentors.

| Student | Project Title | Pitt Mentor | Tuskegee Mentor |
|-----------------|---|--------------------|------------------------|
| Dewberry, Laura | Regulation of Fatty Acid Synthase in Prostate Cancer by Dietary Folate | Denise O'Keefe | Clayton Yates |
| Johnson, Marcus | Phenethyl Isothiocyanate Effect on Tumor Growth and Survival | Shivendra Singh | Temesgen Samuel |
| Morgan, Darian | Androgen Protein Localization and Degradation | Zhou Wang | Kamel Khazai |

Table 2. Class of 2009 student trainees and mentors.

| Student | Project Title | Pitt Mentor | Tuskegee Mentor |
|-------------------|--|--------------------|------------------------|
| Small, Santanna | Regulation Of Gene Expression By Dietary Folate | Denise O'Keefe | Teshome Yehualaeshet |
| Jenkins, Jamilah | Role Of Phosphoinositide 3-Kinase (PI-3K) For Prostate Tumor Cell Proliferation | Jan Pilch | Timothy Turner |
| Burke, Ryan | Regulation Of STAT3 Expression By Low Nontoxic Doses Of Paclitaxel In Prostate Cancer Cells | Michael Shurin | Temesgen Samuel |
| Phillips, Zachery | Migration as an Indicator of Metastasis in Prostate Cancer Determining The Regulatory Function of Kaiso on Cell | Alan Wells | Clayton Yates |

Table 3. List of student abstracts presented at meetings during the second year of the program.

| Student | Abstract | Meeting |
|--------------------------|--|---|
| Jenkins, Jamilah (2009) | "The Role of Phosphoinositide-3 Kinase (PI-3K) for Prostate Tumor Cell Proliferation" (**Jamila Jenkins was selected for an oral presentation in the Cell Biological Sciences Session**) | Annual Biomedical Research Conference for Minority Students (ABRCMS), November 11-13, 2010, Charlotte, NC |
| Small, Santanna (2009) | "Regulatory Influence of Dietary Folate on Prostate Cancer Gene Expression" | Annual Biomedical Research Conference for Minority Students (ABRCMS), November 11-13, 2010, Charlotte, NC |
| Phillips, Zachery (2009) | "Determining The Regulatory Function of Kaiso on CXCR3 and EGFR Induced Cell Migration in Prostate Cancer" | Annual Biomedical Research Conference for Minority Students (ABRCMS), November 11-13, 2010, Charlotte, NC |
| Johnson, Marcus (2010) | "Phenethyl Isothiocyanate Inhibits Growth of a Mouse Mammary Tumor Cell Line (BRI-JM04) by Causing Apoptosis" | Annual Biomedical Research Conference for Minority Students (ABRCMS), November 11-13, 2010, Charlotte, NC |
| Morgan, Darian (2010) | NES ^{AR} Plays a Major Role in Regulating AR Protein Subcellular Localization, Ubiquitination and Proteasome-Dependent Degradation | Annual Biomedical Research Conference for Minority Students (ABRCMS), November 11-13, 2010, Charlotte, NC |

May 2010 – August 2010, Trainees will travel to the University of Pittsburgh to begin their 10-week prostate cancer research experience. All seven students undertook a summer of research under the aegis of the Summer Undergraduate Research Program of the Cellular and Molecular Pathology Graduate Program, as described in the proposal. This provided didactic sessions and workshops in grant and paper writing and admission planning for graduate and medical schools. All three new students were successful in their work and were invited by their mentors to return for a second summer. The four returning students continued their work and were successful as judged by their mentors and the end of the summer program Trainee Symposium presentations.

August 2010 - May 2011 Trainees will return from University of Pittsburgh, and continue their research training for the upcoming academic year under guidance of Tuskegee University Faculty Mentors. The three trainees of the Class of 2010 established research projects at Tuskegee University that dovetailed with and continued upon the work done at Pittsburgh (Table 1). The returning four trainees of the Class of 2009 continued their research at Tuskegee. This has led to the students presenting abstracts at national and regional research meetings (Table 3). Three of four returning and two of three (one had a family conflict for attending) new trainees presented at the ABRCMS in the fall of 2010. These data demonstrate a long-term commitment by the returning students.

Year 3 (2010)

December 2010 – January 2011, the second group of Tuskegee University sophomore trainees will be selected as “Prostate Cancer Scholars” for summer internship at the University of Pittsburgh. The third round of selection has been completed with four new trainees coming this summer. The process was similar to the preceding year. The three returning trainees from the Class of 2010 are determining ability to return for the second summer.

KEY ACCOMPLISHMENTS

- Three student trainees were selected as Class of 2010
- All four student trainees from Class of 2009 continued
- All completed the summer training successfully
- All three Class of 2010 were invited back for the next summer in the same laboratory
- All seven established/continued ongoing research activities at Tuskegee
- Five of seven trainees presented posters or talks at a national meeting
- Four new student trainees were selected as Class of 2011

REPORTABLE OUTCOMES

Abstracts:

2010

Zachery Phillips, Qian Wu, Alan Wells, Clayton Yates. Determining the Regulatory Function of Kaiso on Cell Migration as an Indicator of Metastasis in Prostate Cancer. Annual Biomedical Research Conference for Minority Students, November 10-13, 2010, Charlotte, NC. Poster Presentation.

Jamilah Jenkins, Jianjun Zhou, Clayton Yates. (2010) The Effects of Epithelial to Mesenchymal Transition (EMT) on RC77 Prostate Tumor Cells. The First Joint Annual Research Symposium (11th Annual HBCU-UP Symposium & 37th Annual Sigma Xi Research Symposium), March 12-13, 2010 Tuskegee, AL. Poster Presentation.

Jamilah Jenkins. Role of Phosphoinositide 3-kinase (PI-3K) for Prostate Tumor Cell

Proliferation. Annual Biomedical Research Conference for Minority Students, November 10-13, 2010, Charlotte, NC. Oral Presentation (Biological Sciences Session 12).

Marcus E. Johnson, Eun-Ryeong Hahm, Shivendra V. Singh. (2010) Phenethyl Isothiocyanate Inhibits Growth of a Mouse Mammary Tumor cell line (BRI-JM04) By Causing Apoptosis. Annual Biomedical Research Conference for Minority Students, November 10-13, 2010, Charlotte, NC. Poster Presentation.

Darian Morgan and Zhou Wang. (2010) NES^{AR} Plays a Major Role in Regulating AR Protein Subcellular Localization, Ubiquitination and Proteasome-dependent Degradation. Annual Biomedical Research Conference for Minority Students, November 10-13, 2010, Charlotte, NC. Poster Presentation.

Santanna Small and Denise O'Keefe. (2010) Regulation of Prostate Cancer Gene Expression by Dietary Folate. Annual Biomedical Research Conference for Minority Students, November 10-13, 2010, Charlotte, NC. Poster Presentation.

Santanna Small and Denise O'Keefe. (2010) Regulation of Gene Expression by Dietary Folate. The First Joint Annual Research Symposium (11th Annual HBCU-UP Symposium & 37th Annual Sigma Xi Research Symposium), March 12-13, 2010 Tuskegee, AL Tuskegee, AL. Poster Presentation.

2009

Ryan K. Burke, Galina V. Shurin, Michael R. Shurin. (2009) Regulation of STAT3 Expression By Low Non Toxic Doses of Paclitaxel in Prostate Cancer. HBCU-UP National Research Conference, Washington, DC. Poster Presentation. ****2nd Place Prize Winner: Ryan Burke; Category: Poster Presentation; Subject Area: Biological Sciences.**

Jamilah Jenkins, Lynn Knowles, Jan Pilch. (2009) The Role of Phosphoinositide-3 Kinase (PI-3K) for Prostate Tumor Cell Proliferation. HBCU-UP National Research Conference, Washington, DC. Poster Presentation.

Santanna Small and Denise O'Keefe. (2009) Regulation of Gene Expression by Dietary Folate. HBCU-UP National Research Conference, Washington, DC. Poster Presentation.

Zachery Phillips, Qian Wu, Alan Wells, Clayton Yates. Determining the Regulatory Function of Kaiso on Cell Migration as an Indicator of Metastasis in Prostate Cancer. Annual Biomedical Research Conference for Minority Students (ABRCMS), Phoenix, AZ. Poster Presentation. – ****\$250 Award Winner: Zachery Phillips; Poster Presentation.**

CONCLUSIONS

The first two years of this three-year training award has successfully reached and exceeded defined milestones. The systems are firmly in place to implement the following years' cadre of trainees.

Importance/Implications: The Key Accomplishments above firmly demonstrate the ability to establish a summer training program that has continuity with the home HBCU and the summer program itself. The outcomes over time will test whether this produces trainees more committed to research and/or prostate cancer than the usual one summer session disconnected from the home institution. At this time the trainees of the Class of 2009 are still in the decision process of determining their post-graduate careers. This will be tracked as a demonstrable outcome.

Recommended changes: The feedback from the trainees and mentors is that there is a learning curve during the first half of the summer program. Thus, the momentum gained during the last month of summer training needs to be seamlessly transferred to the home institution with a continuation project, that holds the promise not only of return the second summer, but of leading to a publication. We have decided to emphasize the continuity of the program to attain lasting outcomes.